SLEET STORM IN OHIO.

[Extract from the Monthly Climatological Report, Ohio Section, February, 1909.]

A severe sleet storm occurred in the northern and middle sections of Ohio on February 14–16. The greatest damage was done in Hancock, Seneca, Erie, and Huron counties, where it was one of the worst sleet and ice storms ever experienced in Ohio.

The storm began as a mist or light rain, while the temperature of the air near the ground was from 5° to 10° below the freezing point, causing the precipitation to freeze to all objects on which it fell. This continued for nearly two days in many places, and finally changed to a damp, clinging snow, which added further weight to the already overloaded wires and trees. In some places the ice incrusting the telephone and telegraph wires was reported to be about 1 inch in diameter. At Fremont a section of telephone wire 4 feet long, coated with ice, weighed three pounds. At Tiffin a section 1 foot in length weighed one-half pound, while a small twig, with its ice covering, measured five inches in circumference.

The amount of precipitation for the entire storm was unusually heavy.

The damage to telegraph, telephone, and electric light wires, electric railways, fruit and shade trees was widespread. In many instances electric railways were unable to operate their cars for several days. Over 600 poles belonging to one company were broken down between Fremont and Norwalk, and 300 were broken between Findlay and Upper Sandusky. Telephone and telegraph communication was interrupted in the northwestern part of the State for nearly a week, and it required three months to repair the lines of that district.—*J. M. Kirk.*

TORNADOES IN MISSISSIPPI.

[Extract from the Monthly Climatological Report, Mississippi Section, February, 1909.]

In connection with severe thunderstorms on February 5, a tornado developed in northern Sharkey County, Miss., at about 9:30 a. m. The tornado moved in a northerly direction at Booth, where first observed, and later apparently changed its course to northeast when passing in the vicinity of Nittayuma, while in the vicinity of Murphy it moved from west to east. The width of the path varied from about 200 feet to one-fourth of a mile. The loss of life was confined to Booth, where five persons were killed. In the path of the storm, which was approximately 25 miles long, houses, cabins, barns, etc., were destroyed or damaged and some stock killed. Altogether about a dozen persons were more or less injured. Trees were blown down and some buildings slightly damaged for more than one-half mile on either side of the path of the storm. At Booth chickens were stripped of their feathers. The total property loss was probably somewhat less than $20,000. Heavy falls of hail were reported at a number of stations on the 5th.

On February 22 a tornado, moving from southwest to northeast, passed through the town of Falkner, Ripley County, Miss., at 8:10 a. m. Its path was from 200 to 400 yards in width. No lives were lost and no one was seriously injured, although two schoolhouses and a livery stable were blown down and eight houses were unroofed. Two horses were killed. The total property loss was estimated at $8,000.—*W. S. Belden.*

WATERSPOUTS ON THE ATLANTIC COAST.

Local press reports state that large waterspouts developed off Atlantic City, N. J., following a heavy blow on the afternoon of March 30. No casualties have been reported.

CORRIGENDA.

In the MONTHLY WEATHER REVIEW for January, 1909, p. 29, col. 1, line 30, for "mutual" read "natural;" on p. 42, col. 1, in the comparative table of rainfall in Jamaica the column "1908" should be "1909."

In the MONTHLY WEATHER REVIEW for February, 1909, p. 66, col. 2, line 3 from the bottom, for "Strömer" read "Störmer;" p. 60, col. 1, paragraph 2, line 1, and paragraph 3, line 8, for "Clayperon" read "Clapeyron;" p. 60, col. 2, footnote 4, for "1873, Marié-Davy, — title." read "1873, Marié-Davy, 1st title."

THE WEATHER OF THE MONTH.

By Mr. P. C. DAY, Acting Chief, Climatological Division.

PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure for March, 1909, over the United States and Canada is graphically shown on Chart VI, and the average values and departures from the normal are shown for each station in Tables I and III.

The mean atmospheric pressure during March, 1909, was below the normal over all portions of the United States and Canada, except along the eastern slope of the Rocky Mountains and over the north Pacific coast and portions of British Columbia, where it was slightly above.

The mean pressure diminished rapidly from the Mississippi Valley eastward, the negative departures ranging from about —.05 over the first named locality to slightly more than —.20 inch over eastern New England and the Maritime Provinces of Canada, the mean for the month over the last-named district ranging from 29.80 to less than 29.70 inches. It was also below the normal by smaller amounts over the Plateau and south Pacific coast districts.

From February to March, 1909, there was an increase in pressure from the upper Mississippi Valley westward over the Missouri Valley and northern Plateau to the north Pacific coast, the increase over the latter district ranging from 0.10 to 0.20 inch.

Over the remaining districts of the United States there was a general decrease in pressure, being most pronounced along the Atlantic and Gulf coasts and over the Southwest, where the decrease ranged from 0.10 to nearly 0.20 inch.

With the highest average pressure over the upper Missouri Valley and a decided decrease in pressure to the eastward, northwesterly winds prevailed over most of the eastern districts, except along the Gulf coast, where they were largely from southerly points.

March, 1909, was a decidedly stormy month over the districts east of the Rocky Mountains, practically all portions coming under the influence of well-defined storm areas during some portion of the month.

There was a general excess of wind movement over the Atlantic and Gulf States, in the Lake region, and over the south Pacific coast. Over the Great Plains region and the northern portions of the Mountain, Plateau, and Pacific coast districts there was generally less wind than usual at that season of the year.

TEMPERATURE.

March, 1909, opened with moderate weather conditions prevailing over all districts, which continued till the morning of the 3d, when rain and snow set in over the Lake region, and during the following twenty-four hours developed into a storm of considerable severity, moving southeastward to the middle Atlantic coast by the morning of the 4th, and to the New England coast by the evening of the same date. Moderate weather

again prevailed over all districts until about the 8th, when a storm that had moved from the Pacific coast to southern Texas during the preceding two days developed considerable intensity and during the 8th, 9th, and 10th moved northeastward to the upper Lake region, accompanied by heavy rains over the Ohio and lower Mississippi valleys and heavy snows in portions of the lower Missouri and upper Mississippi valleys and Lake region. Following this area of heavy rain and snow cold weather set in over the Northwest on the morning of the 10th, and during the 11th to the 13th unusually cold weather prevailed over portions of the middle and southern slope and Rocky Mountain regions. Generally cold weather for the season, especially over the mountain region, prevailed from the 10th to the 24th, when a considerable rain and snow area covered the Plains region, and moving northeastward and eastward brought general rains and snows from the Mississippi Valley to the Atlantic coast by the morning of the 25th. Generally moderate temperatures, with considerable cloudy weather and frequent periods of light precipitation characterized the remainder of the month.

During the first decade the temperature averaged above the normal in practically all districts, the excess being most pronounced over the region between the Appalachian and Rocky Mountains, where the mean for the ten-day period ranged from 5° to 12° above the normal. During the second decade reverse conditions existed, and the mean temperature was generally below the normal in all districts, except along the Atlantic coast and at a few points in the Plateau and other districts. Over portions of the middle Mississippi and lower Missouri valleys and the southern portions of the Great Plains and Rocky Mountain regions the average temperature for this decade ranged from 4° to 8° below the normal. The average temperature for the third decade was below the normal in all interior districts, but was above the normal over the Gulf and North Atlantic States and along the northern border, where the normal was exceeded by from 3° to 6°.

As a whole the average temperature for the month was above the normal by small amounts along the immediate Atlantic coast, over the whole of the Gulf region, including the lower portions of the Ohio, Mississippi, and Missouri valleys, and by substantial amounts along the entire northern border from the Lake region to the Pacific. It was a decidedly warm month over the districts from North Dakota to eastern Washington, where the average ranged from 3° to more than 6° above the normal.

The extremes of temperature for the month were not unusual, the maximum temperatures ranging from less than 50° over the northern districts to 90° or above in the Rio Grande Valley and central Texas. Minimum temperatures of from 0° to —10° occurred at points in New England, Iowa, and Nebraska, in the vicinity of Lake Superior, over the northern portions of Minnesota, North Dakota, and Montana, and in the Rocky Mountain regions as far south as northern New Mexico. Temperatures of 32° or lower were recorded as far south as the central portions of the Gulf States, and generally over the western districts, except near the Pacific coast and at the lower elevations of California and Arizona.

PRECIPITATION.

The precipitation from the storm of the 8th to 10th was unusually heavy over portions of the lower Mississippi and Ohio valleys, in the southern Appalachian Mountain region and portions of the east Gulf States, and with the heavy rains of the 12th over portions of northern Georgia, central Alabama and surrounding districts caused high waters and some disastrous floods, especially in the streams of central Alabama and northern Georgia.

Aside from the above and some heavy falls of snow in the middle Atlantic coast district on the 4th and 5th and in the central and southeastern Rocky Mountain districts from the 7th to 11th, the precipitation occurred generally as light rain or snow well distributed during the month.

Precipitation was in excess of the average over the interior portions of the east Gulf States, at a few points in Maryland, Virginia, and northern New England, and generally over the Rocky Mountain region and the southern portions of Arizona and California.

Over the central and northern portions of Alabama and Georgia the excess ranged from 6 to 10 inches, and in portions of Colorado and southern Wyoming the excess ranged from 1 to more than 3 inches; the monthly fall in portions of southeastern Wyoming being especially heavy for that locality.

Over the remaining portions of the United States the precipitation was generally less than the average, the negative departures being quite pronounced over the eastern portions of Virginia and North Carolina, southern Florida, portions of North Dakota, Arkansas, Louisiana, and the greater part of Texas, where rain was badly needed at the end of the month. There was also a general lack of rainfall over the north Pacific coast especially in the western portions of Oregon and Washington.

SNOWFALL.

Snow in measurable quantities occurred in all portions of the United States, except over the South Atlantic and Gulf States, southwestern Arizona and along the coasts and at the low elevations of the Pacific coast States.

Unusually heavy snows occurred over portions of the Appalachian Mountains and Atlantic coast regions from Virginia northward on the 3d and 4th; the snow being unusually wet and heavy caused much damage to telegraph and telephone lines and seriously interferred with transportation and other interests in portions of Maryland and the adjoining States.

Heavy snows occurred over portions of the central and southern Rocky Mountain districts during the second week of the month.

In portions of New Mexico the fall was the heaviest in many years and with the severe cold following caused the loss of several human lives, and much suffering to sheep and cattle unprotected from the inclement weather.

In portions of Colorado and Wyoming the snowfall was also unusually heavy, especially in the mountains of southern Wyoming where the amounts were greater than ever known in March.

Over the remaining portions of the Mountain and Plateau districts the snowfall was about average, except over most of Idaho and Washington where the amounts were generally very light.

At the end of the month the snow had disappeared from all portions of the United States, except the more northern districts and in the mountain regions of the west.

In portions of northern New England and the mountain districts of New York, the depths in the woods ranged from 2 to 3 feet, but in the open fields it had largely disappeared. In the northern Peninsula of Michigan deep snow still covered the ground at the end of the month and there was a considerable depth in the northern portions of Wisconsin, Minnesota, and North Dakota, with smaller amounts as far south as northern Iowa and central Nebraska.

In the mountain regions of the West the snow had disappeared from the lower elevations but in the higher ranges it had melted but little, due to the generally cool weather, and the accumulated stock at the end of the month was generally greater than at the same time in many years It had been largely drifted into the ravines and protected parts of the mountains, was generally well packed and hard frozen, possessed a large water content, and was generally reported in such conditions as to assure an abundant supply of water during the warmer portions of the year.

HUMIDITY AND SUNSHINE.

The average relative humidity was above the normal over southern Florida, the lower Lake region, and from the upper Lakes westward and southwestward over the upper Missouri Valley, Rocky Mountain and Plateau districts, and south Pacific coast. In the southern Plateau and mountain regions the excess was from 10 to 21 per cent. Over all other portions of the country the average ranged from normal to 15 per cent below.

There was an excess of cloudiness over nearly all of the country, except along the Atlantic and part of the Gulf coasts, and from the upper Missouri Valley westward over Idaho and Washington to the Pacific coast. Over the Lake regions, the Ohio, upper Mississippi and Missouri valleys, the sunshine ranged from 26 to 40 per cent of the possible.

In Canada.—Director R. F. Stupart says:

The mean temperature for March was generally above the average in Canada, although in portions of British Columbia, the major part of Ontario and over Quebec, the normal value was either not quite or just reached. Departures from average in the Western Provinces ranged between 2° and 8°.

The precipitation recorded in Canada during March was less than the usual quantity, except over a large portion of Ontario, eastern Quebec, and the Maritime Provinces, where the normal amount was slightly exceeded.

On the last day of the month the ground over a large portion of Canada was snow covered. In British Columbia the higher levels were well covered; also the northern districts of Alberta. In Saskatchewan and Manitoba there was a depth of from 3 to 7 inches. Northern Ontario recorded from 5 to 11 inches; elsewhere in the province the ground was practically bare. A depth of 16 inches at Montreal increased eastward to 52 inches at Quebec. New Brunswick was also largely snow covered, the depth decreasing rapidly southward to a trace near the Bay of Fundy.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	12	33.1	+ 0.2	+ 5.3	+ 1.8
Middle Atlantic	16	40.2	— 0.1	+10.0	+ 3.3
South Atlantic	10	54.1	+ 0.3	+ 9.5	+ 3.2
Florida Peninsula*	8	67.6	+ 0.8	+11.8	+ 3.9
East Gulf	11	58.6	+ 1.4	+ 8.6	+ 2.9
West Gulf	10	58.8	+ 1.5	+10.4	+ 3.5
Ohio Valley and Tennessee	13	43.9	— 0.5	+ 9.6	+ 3.2
Lower Lake	10	31.6	— 0.7	+ 8.2	+ 2.7
Upper Lake	12	28.8	+ 1.5	+ 8.3	+ 2.8
North Dakota*	9	23.9	+ 3.4	+ 4.5	+ 1.5
Upper Mississippi Valley	15	37.9	— 0.1	+ 8.9	+ 3.0
Missouri Valley	12	37.0	+ 0.9	+ 9.0	+ 3.0
Northern Slope	9	32.4	+ 1.6	+ 3.7	+ 1.2
Middle Slope	6	41.6	— 0.9	+ 6.8	+ 2.3
Southern Slope*	7	52.3	— 0.2	+ 8.8	+ 2.9
Southern Plateau*	12	45.6	— 3.8	— 0.8	— 0.3
Middle Plateau*	10	36.8	— 1.1	+ 5.4	+ 1.8
Northern Plateau*	12	40.4	+ 2.5	+ 4.8	+ 1.6
North Pacific	7	44.2	0.0	— 3.0	— 1.0
Middle Pacific	8	50.5	— 2.0	+ 1.1	+ 0.4
South Pacific	4	53.0	— 2.1	+ 0.2	+ 0.1

* Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	71	— 4	Missouri Valley	72	0
Middle Atlantic	69	— 3	Northern Slope	69	+ 2
South Atlantic	71	— 4	Middle Slope	65	+ 5
Florida Peninsula	78	+ 1	Southern Slope	53	— 2
East Gulf	71	— 2	Southern Plateau	49	+10
West Gulf	68	— 4	Middle Plateau	59	+ 5
Ohio Valley and Tennessee	70	— 1	Northern Plateau	64	— 3
Lower Lake	78	+ 2	North Pacific	80	+ 1
Upper Lake	79	0	Middle Pacific	75	— 3
North Dakota	86	+ 6	South Pacific	72	+ 1
Upper Mississippi Valley	74	+ 1			

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		Inches.	Inches.
New England	12	3.09	82	— 0.7	+ 1.5
Middle Atlantic	16	2.95	81	— 0.7	— 1.2
South Atlantic	10	3.66	79	— 1.0	— 3.8
Florida Peninsula*	8	2.52	81	— 0.6	— 3.2
East Gulf	11	7.07	120	+ 1.2	— 0.6
West Gulf	10	1.94	62	— 1.2	— 4.4
Ohio Valley and Tennessee	13	3.83	85	— 0.7	+ 1.0
Lower Lake	10	2.65	100	0.0	+ 2.0
Upper Lake	12	1.45	64	— 0.8	— 0.4
North Dakota*	9	0.30	30	— 0.7	— 1.1
Upper Mississippi Valley	15	1.90	79	— 0.5	+ 0.7
Missouri Valley	12	1.23	64	— 0.7	— 0.2
Northern Slope	9	1.02	91	— 0.1	— 0.1
Middle Slope	6	1.64	114	+ 0.2	— 0.3
Southern Slope*	7	1.55	124	+ 0.3	— 1.3
Southern Plateau*	12	0.84	89	— 0.1	— 0.2
Middle Plateau*	10	0.87	64	— 0.5	+ 0.7
Northern Plateau*	12	0.84	62	— 0.5	+ 0.7
North Pacific	7	2.72	55	— 2.2	+ 1.6
Middle Pacific	8	3.08	81	— 0.7	+ 9.8
South Pacific	4	2.59	100	0.0	+ 6.8

* Regular Weather Bureau and selected cooperative stations.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	5.4	— 0.2	Missouri Valley	5.2	— 0.4
Middle Atlantic	5.5	0.0	Northern Slope	5.0	— 0.3
South Atlantic	4.9	+ 0.2	Middle Slope	5.4	+ 1.0
Florida Peninsula	3.5	— 0.5	Southern Slope	4.4	+ 0.2
East Gulf	5.3	+ 0.6	Southern Plateau	3.5	+ 0.5
West Gulf	4.8	— 0.4	Middle Plateau	4.9	0.0
Ohio Valley and Tennessee	6.3	+ 0.4	Northern Plateau	5.8	— 0.7
Lower Lake	6.6	+ 0.2	North Pacific	6.5	— 0.1
Upper Lake	6.4	+ 0.5	Middle Pacific	5.3	+ 0.3
North Dakota	5.9	+ 0.4	South Pacific	4.6	+ 0.1
Upper Mississippi Valley	6.2	+ 0.7			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Amarillo, Tex.	24	60	nw.	Mount Weather, Va.	26	64	nw.
Atlanta, Ga	3	58	nw.	Do	31	51	nw.
Do	24	66	nw.	Nantucket, Mass	4	55	ne.
Block Island, R. I.	4	62	ne.	Do	25	54	se.
Do	5	50	w.	New York, N. Y.	5	56	w.
Do	11	52	w.	Do	10	52	w.
Do	25	56	se.	Do	11	60	w.
Buffalo, N. Y.	10	68	sw.	North Head, Wash.	1	68	s.
Cheyenne, Wyo.	1	50	w.	Do	8	54	nw.
Cleveland, Ohio	9	54	s.	Do	29	56	se.
Columbus, Ohio	4	50	nw.	Do	30	68	se.
Detroit, Mich.	10	50	w.	Oklahoma, Okla.	23	50	s.
El Paso, Tex.	7	54	w.	Do	24	56	sw.
Do	23	60	w.	Point Reyes Light, Cal.	5	58	s.
Do	28	52	w.	Do	7	64	nw.
Fort Worth, Tex.	24	52	w.	Do	8	79	nw.
Galveston, Tex.	8	53	se.	Do	9	79	nw.
Hatteras, N. C.	3	52	w.	Do	17	74	nw.
Do	25	58	nw.	Do	19	64	nw.
Mount Tamalpais, Cal	7	64	nw.	Do	20	52	s.
Do	8	75	nw.	Port'and, Me.	25	56	e.
Do	9	62	nw.	Pueblo, Colo	26	50	w.
Do	10	50	n.	Southeast Farallon, Cal.	8	54	n.
Do	19	58	nw.	Do	9	60	n.
Do	20	66	nw.	Do	17	55	n.
Do	29	66	w.	Do	18	51	n.
Mount Weather, Va.	4	75	nw.	Syracuse, N. Y.	11	54	w.
Do	5	54	nw.	Tatoosh Island, Wash.	1	52	sw.
Do	10	53	nw.	Do	6	54	ne.
Do	11	59	nw.	Do	30	52	s.
Do	25	78	nw.	Toledo, Ohio	10	58	sw.